

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>03001242.1</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/EP 03/14507</b>	International filing date (day/month/year) <b>18/12/2003</b>	(Earliest) Priority Date (day/month/year) <b>21/01/2003</b>
Applicant <b>BIOMAY PRODUKTIONS- UND HANDELS-AKTIENGESELLSCHAFT</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures.

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 C07K14/415 A61K38/16 A61K39/36

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, MEDLINE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>VALENTA RUDOLF ET AL: "Recombinant allergen molecules: Tools to study effector cell activation." IMMUNOLOGICAL REVIEWS, vol. 179, February 2001 (2001-02), pages 119-127, XP002242170 ISSN: 0105-2896 page 124, right-hand column, line 23 -page 125, right-hand column, line 29; figure 3; table 1</p> <p style="text-align: center;">---</p> <p style="text-align: center;">-/--</p>	1-5

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*&\* document member of the same patent family

Date of the actual completion of the international search

30 March 2004

Date of mailing of the international search report

06/04/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Marinoni, J-C

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>VALENTA R ET AL: "Mapping of the IgE and IgG binding sites of the major timothy grass pollen allergen Phl p 2 by gene fragmentation"</p> <p>JOINT CONGRESS OF THE BRITISH SOCIETY FOR IMMUNOLOGY AND THE BIOCHEMICAL SOCIETY, 10 December 1996 (1996-12-10), page 30</p> <p>XP002950278</p> <p>abstract</p> <p>---</p>	1-5
Y	<p>FOCKE M ET AL: "Nonanaphylactic synthetic peptides derived from B cell epitopes of the major grass pollen allergen, Phl p 1, for allergy vaccination."</p> <p>THE FASEB JOURNAL: OFFICIAL PUBLICATION OF THE FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY. UNITED STATES SEP 2001, vol. 15, no. 11, September 2001 (2001-09), pages 2042-2044, XP002242171</p> <p>ISSN: 0892-6638</p> <p>cited in the application</p> <p>the whole document</p> <p>---</p>	1-3
A	<p>WO 94 23035 A (STEINBERGER PETER ;LAFFER SYLVIA (AT); SCHEINER OTTO (AT); KRAFT D) 13 October 1994 (1994-10-13)</p> <p>cited in the application</p> <p>the whole document</p> <p>---</p>	
A	<p>DOLECEK CHRISTIANE ET AL: "Molecular characterization of Phl p II, a major timothy grass (Phleum pratense) pollen allergen."</p> <p>FEBS (FEDERATION OF EUROPEAN BIOCHEMICAL SOCIETIES) LETTERS, vol. 335, no. 3, 1993, pages 299-304, XP002242172</p> <p>ISSN: 0014-5793</p> <p>cited in the application</p> <p>---</p>	
A	<p>EP 1 221 317 A (SHAN BETEILIGUNGSGESELLSCHAFT) 10 July 2002 (2002-07-10)</p> <p>---</p>	
A	<p>ANSARI A A ET AL: "COMPLETE AMINO ACID SEQUENCE OF A LOLIUM-PERENNE PERENNIAL RYE GRASS POLLEN ALLERGEN LOL P II"</p> <p>JOURNAL OF BIOLOGICAL CHEMISTRY, vol. 264, no. 19, 1989, pages 11181-11185, XP002242173</p> <p>ISSN: 0021-9258</p> <p>cited in the application</p> <p>---</p> <p style="text-align: center;">-/--</p>	

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>FREIDHOFF L R ET AL: "A STUDY OF THE HUMAN IMMUNE RESPONSE TO LOLIUM PERENNE (RYE) POLLEN AND ITS COMPONENTS, LOL P I AND LOL P II (RYE I AND RYE II). I. PREVALENCE OF REACTIVITY TO THE ALLERGENS AND CORRELATIONS AMONG SKIN TEST, IGE ANTIBODY, AND IGG ANTIBODY DATA" JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY, MOSBY - YEARLY BOOK, INC, US, vol. 78, 1 July 1986 (1986-07-01), pages 1190-1201, XP002053587 ISSN: 0091-6749 cited in the application</p> <p>----</p>	
A	<p>HAGE-HAMSTEN VAN M ET AL: "SKIN TEST EVALUATION OF GENETICALLY ENGINEERED HYPOALLERGENIC DERIVATIVES OF THE MAJOR BIRCH POLLEN ALLERGEN, BET V 1: RESULTS OBTAINED WITH A MIX OF TWO RECOMBINANT BET V 1 FRAGMENTS AND RECOMBINANT BET V 1 TRIMER IN A SWEDISH POPULATION BEFORE THE BIRCHPOLLEN SEASON" JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY, MOSBY - YEARLY BOOK, INC, US, vol. 104, no. 5, November 1999 (1999-11), pages 969-977, XP001022679 ISSN: 0091-6749</p> <p>----</p>	
A	<p>VRTALA S ET AL: "Conversion of the major birch pollen allergen, bet v 1, into two nonanaphylactic T cell epitope-containing fragments: Candidates for a novel form of specific immunotherapy" JOURNAL OF CLINICAL INVESTIGATION, NEW YORK, NY, US, vol. 99, no. 7, 1997, pages 1673-1681, XP002221492 ISSN: 0021-9738</p> <p>----</p>	
A	<p>DE MARINO S ET AL: "An immunoglobulin-like fold in a major plant allergen: The solution structure of Phl p 2 from timothy grass pollen." STRUCTURE (LONDON), vol. 7, no. 8, 15 August 1999 (1999-08-15), pages 943-952, XP002242174 ISSN: 0969-2126 cited in the application</p> <p>----</p> <p>-/--</p>	

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>AKDIS C A ET AL: "REGULATION OF SPECIFIC IMMUNE RESPONSES BY CHEMICAL AND STRUCTURAL MODIFICATIONS OF ALLERGENS" INTERNATIONAL ARCHIVES OF ALLERGY AND IMMUNOLOGY, vol. 121, no. 4, 2000, pages 261-269, XP001016273 ISSN: 1018-2438</p> <p>---</p>	
A	<p>FERREIRA FATIMA ET AL: "Genetic engineering of allergens: Future therapeutic products." INTERNATIONAL ARCHIVES OF ALLERGY AND IMMUNOLOGY, vol. 128, no. 3, July 2002 (2002-07), pages 171-178, XP009011303 July, 2002 ISSN: 1018-2438</p> <p>---</p>	
A	<p>SCHRAMM G ET AL: "Allergen engineering: variants of the timothy grass pollen allergen Phl p 5b with reduced IgE-binding capacity but conserved T cell reactivity" JOURNAL OF IMMUNOLOGY, WILLIAMS &amp; WILKINS CO, US, vol. 162, no. 4, 15 February 1999 (1999-02-15), pages 2406-2414, XP002216586 ISSN: 0022-1767</p> <p>-----</p>	

**FURTHER INFORMATION CONTINUED FROM PCT/SA/ 210**

Continuation of Box I.2

Claims Nos.: 9-14 partially

Present claims 9-14 relate to a use or a vaccine defined by reference to a desirable characteristic or property, namely that it comprises a mosaic allergen obtained by the methods of claims 1-6.

The claims cover all uses and vaccines having this characteristic or property, whereas the application provides support within the meaning of Article 84 EPC and disclosure within the meaning of Article 83 EPC for only a very limited number of such uses and vaccines. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 84 EPC). Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the uses and vaccines comprising the mosaic allergen exemplified in the description and having the SEQ ID No. 1 or the DNA of SEQ ID No. 8 encoding it.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP 03/14507

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 9-14 partially  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9423035	A	13-10-1994	AT 401937 B	27-12-1996
			AT 67293 A	15-05-1996
			WO 9423035 A2	13-10-1994
			AT 171725 T	15-10-1998
			AU 684269 B2	11-12-1997
			AU 6276894 A	24-10-1994
			CA 2136973 A1	13-10-1994
			DE 59406999 D1	05-11-1998
			DK 643769 T3	21-06-1999
			EP 0643769 A1	22-03-1995
			ES 2124878 T3	16-02-1999
			FI 945648 A	25-01-1995
			JP 8500492 T	23-01-1996
			NO 944634 A	23-01-1995
			SI 643769 T1	30-04-1999
<hr/>				
EP 1221317	A	10-07-2002	EP 1221317 A1	10-07-2002
			EP 1219301 A1	03-07-2002
			US 2002173625 A1	21-11-2002
<hr/>				